

## 3.22 Trigonometric Form of Complex Numbers

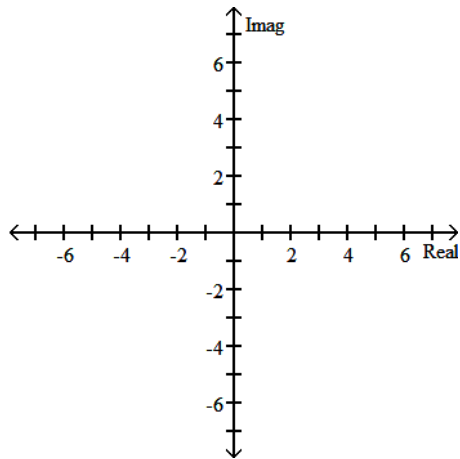
Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the complex number, and find its absolute value.

1)  $2 - 6i$

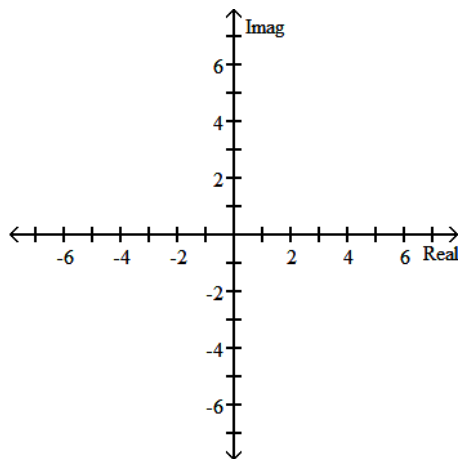
1) \_\_\_\_\_



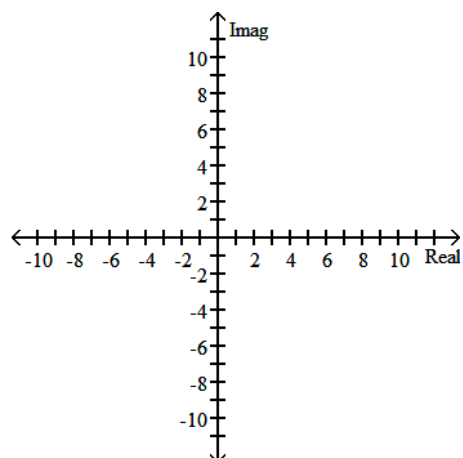
Graph the complex number.

2)  $6i$

2) \_\_\_\_\_



3)  $-9$



3) \_\_\_\_\_

Write the complex number in trigonometric form, using degree measure for the argument.

4)  $-3 + 3i$

4) \_\_\_\_\_

5)  $4 - 4i$

5) \_\_\_\_\_

6)  $8$

6) \_\_\_\_\_

7)  $i\sqrt{3}$

7) \_\_\_\_\_

8)  $-\sqrt{3} + i$

8) \_\_\_\_\_

9)  $3 + 4i$

9) \_\_\_\_\_

Write the complex number in the form  $a + bi$ .

10)  $\sqrt{2}(\cos 45^\circ + i \sin 45^\circ)$

10) \_\_\_\_\_

11)  $3(\cos 90^\circ + i \sin 90^\circ)$

11) \_\_\_\_\_

12)  $\sqrt{3} \left[ \cos \frac{\pi}{3} + i \sin \frac{\pi}{3} \right]$

12) \_\_\_\_\_

Perform the indicated operation. Write the answer in the form  $a + bi$ .

13)  $2(\cos 150^\circ + i \sin 150^\circ) \cdot 3(\cos 300^\circ + i \sin 300^\circ)$

13) \_\_\_\_\_

14)  $\sqrt{3}(\cos 10^\circ + i \sin 10^\circ) \cdot \sqrt{2}(\cos 20^\circ + i \sin 20^\circ)$

14) \_\_\_\_\_

15)  $\frac{4(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3})}{2(\cos \frac{\pi}{6} + i \sin \frac{\pi}{6})}$

15) \_\_\_\_\_

16)  $\frac{4.1(\cos 36.7^\circ + i \sin 36.7^\circ)}{8.2(\cos 84.2^\circ + i \sin 84.2^\circ)}$

16) \_\_\_\_\_

Find the product and quotient for each pair of complex numbers, using trigonometric form. Write the answer in the form  $a + bi$ .

17)  $z_1 = (4 + 4i)$ ,  $z_2 = (-5 - 5i)$

17) \_\_\_\_\_

18)  $z_1 = (3 + 4i)$ ,  $z_2 = (-5 - 2i)$

18) \_\_\_\_\_

19)  $z_1 = (2 - 6i)$ ,  $z_2 = (-3 - 2i)$

19) \_\_\_\_\_

Find the product of the given complex number and its complex conjugate in trigonometric form.

20)  $3 \left( \cos \frac{\pi}{6} + i \sin \frac{\pi}{6} \right)$

20) \_\_\_\_\_

21)  $2 (\cos (7^\circ) + i \sin (7^\circ))$

21) \_\_\_\_\_